

REMARKS

Claims 8-31 are pending in the Office Action. Claims 26-31 have been cancelled. The Specification has been amended to improve grammar only. No new matter has been added. The rejections of the claims are respectfully traversed in light of the following remarks, and reconsideration is requested.

Election/Restrictions

A restriction was required under 35 U.S.C. § 121. Applicant elects to prosecute Claims 8-25 of Group I without traverse.

Obviousness-type Double Patenting

Claims 8-13 and 23 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,043,666.

Applicant has timely filed a terminal disclaimer simultaneously with the present Response to Office Action, thereby overcoming the double patenting rejection.

Response to Rejection Under 35 U.S.C. § 103(a)

Claims 8-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Toshio, the Japanese Publication No. 10-019926 cited by Applicant in the PTO-1449, in view of Krüger et al. (U.S. Patent No. 4,773,877 hereinafter "Krüger").

The Examiner recognizes that Toshio does not disclose every feature of the invention, in particular that Toshio "does not disclose the spring portions and electrode pin portions with a layer of electroconductive material." However, the Examiner states that "Krüger et al teach

that it would have been well-known for one of ordinary skill in the art to provide [multilayer] coatings (electroconductive layers) to a resilient contact pin (see column 2, lines 6-26). The Examiner goes on to conclude that “[i]t would have been obvious for one of ordinary skill in the art to form a layer of electroconductive material over an outer circumferential surface of the spring portions and the electrode pin portions as taught by Krüger et al so that both of the spring portions and the electrode pin portions are protected from wearing out fast and have a better conduction for performing tests.”

However, Applicant contends that if Toshio and Krüger were combined, Toshio in view of Krüger fall short of disclosing all the limitations of Claim 8.

Applicant points out that Toshio does not disclose or suggest that the “closely wound portion of the contact unit” is “surface processed so as to include a first layer of electroconductive material that covers an outer surface defined by a plurality of turns of the closely wound portion of the coil spring in a continuous manner,” as recited in Claim 8.

Krüger discloses a “resilient axial bar” that can be provided “with at least one chemically or galvanically applied coating” after its “punching or stamping, etching or the like and deforming without cutting.” (Krüger, col.2, ll.9-21). Krüger further discloses that “[o]ne or more such coatings can be provided already on the metal sheet before the piece for the bar is cut away by punching through it, etching or the like.” (Krüger, col.2, ll.22-24).

However, Krüger does not disclose or suggest any closely wound portion of its spring 19. (See e.g., Krüger, FIGS. 2A, 3, 7, 11, 15, 16, 17, and 19-21). Thus, Krüger only discloses providing a coating following the pattern of the outer surface of the axial bar with no overlap between different portions of the axial bar. Krüger does not disclose or suggest the possibility of a “surface processed so as to include a first layer of electroconductive material that covers

an outer surface defined by a plurality of turns of the closely wound portion of the coil spring in a continuous manner," as recited in Claim 8 and clearly shown in FIG. 2(c) of the Application as filed (layer 8b).

Therefore, because neither Toshio nor Krüger, alone or in combination, disclose or suggest all the limitations of Claim 8, Claim 8 is patentable over Toshio in view of Krüger.

Claims 9-25 are dependent on Claim 8 and contain additional limitations that further distinguish them from Toshio in view of Krüger. Therefore, because neither Toshio nor Krüger, alone or in combination, disclose or suggest all the limitations of Claims 9-25, Claims 9-25 are patentable over Toshio in view of Krüger.

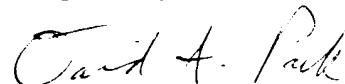
In view of the foregoing, Applicant respectfully requests that the rejection under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

For the above reasons, Applicant believes pending Claims 8-25 are now in condition for allowance and allowance of the Application is hereby solicited. If the Examiner has any questions or concerns, the Examiner is hereby requested to telephone Applicant's Attorney at (949) 752-7040.

Express Mail #EV252518856US

Respectfully submitted,



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ATTACHMENT A

Please amend the paragraph on page 3, starting on line 6, as follows:

According to a preferred embodiment of the present invention, the reduced diameter portion has a smaller inner diameter than the outer diameter of the coil spring portion, and is provided at each axial end of the through hole, and the other of the pair of electrode pin portions has a cylindrical shape which has a smaller diameter than the reduced diameter portion. Thus, when the [objected] object to be contacted has a convex surface as is the case with a solder ball, the electrode pin portion having a cylindrical shape can be applied to the object to be contacted with a certain guiding action, and a stable contact with an object such as a solder ball can be achieved.

Please amend the paragraph on page 4, starting on line 3, as follows.

Figure 1 is an enlarged sectional side view of an essential part of a socket for semiconductor devices embodying the present invention;

Figure 2(a) is a fragmentary perspective view of an essential part showing the coil wire which is gold plated;

Figure 2(b) is a view similar to Figure 2(a) showing the coil wire after it is closely wound;

Figure 2(c) is a view similar to Figure 2(b) showing the coil wire after it is gold plated once again;

Figure 3 is a view similar to Figure 1 showing the socket for semiconductor devices embodying the present invention during [in] use;

Figure 4 is a view similar to Figure 1 showing a second embodiment of the present invention;

Figure 5 is a view similar to Figure 3 showing the second embodiment of the present invention;

Figure 6 is a view showing a third embodiment of the present invention;

Figure 7(a) is a fragmentary perspective view of an essential part of a coil wire following a coiling process; and

Figure 7(b) is a similar view following a gold plating process.

Please amend the paragraph starting on page 6, line 20, as follows:

When the two insulating plates 1 are [assembly] assembled to be in close contact to each other [in close contact] by using threaded bolts or the like, the resilient force of the coil spring portion 4 pushes the tapered portions of the electrode pin portions 5a and 5b against the tapered surfaces of the corresponding tapered hole sections 2a which are complementary to the tapered portions of the electrode pin portions 5a and 5b. Owing to the engagement between the opposing tapered surfaces, the lateral shifting of the free ends of the electrode pin portions 5a and 5b can be favorably minimized. Therefore, when a plurality of such electroconductive contact units are arranged in a matrix as is the case with a socket, the projecting end of each electrode pin portion 5a or 5b can be arranged in a planar coordinate system at a high precision without any effort during the assembly work.

Please amend the paragraph starting on page 11, line 18, as follows:

Because the tapered hole section 2a is not required to be formed, the forming and assembling processes are simplified. For instance, during a time period in which products of a same model are required to be tested, a same relay board may be kept integrally attached to the upper surface of the upper insulating plate 1 with the upper electrode pin portion 5b kept constantly in contact with a terminal on the relay board. Because only the lower electrode pin

portion 5a is required to [accessed] access each of the products to be tested, the electroconductive contact unit 3 in the form of a coil spring is allowed to undergo a cyclic compression without risking the dislodging of the contact unit from the assembly. This contributes to the reduction in cost.